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AB097. Conduction block of mammalian myelinated nerve by local cooling to 15–30 °C after a brief heating

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Background: This study aimed at understanding thermal effects on nerve conduction and developing new methods to produce a reversible thermal block of axonal conduction in mammalian myelinated nerves.

Methods: In 13 cats, conduction block of pudendal nerves by cooling (5–30 °C) or heating (42–54 °C) a small segment of the nerve was monitored by the urethral striated muscle contractions and increases in intraurethral pressure induced by intermittent electrical stimulation of the nerve.

Results: Cold block was observed at 5–15 °C while heat block occurred at 50–54 °C. Cold block was fully reversible, but only brief complete heat block was reversible. A brief reversible complete heat block at 50–54 °C significantly increased the cold block temperature to 15–30 °C.

Conclusions: This study discovered a novel method to block mammalian myelinated nerves at 15–30 °C, providing the possibility to develop an implantable device to block axonal conduction and treat many chronic diseases.

Keywords: Nerve block; cold; heat; reversible

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AB098. Defocused low-energy shock wave can stimulate penile tissues to produce more energy for growth and proliferation in a DMED rat model

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Background: Defocused low-energy shock wave therapy (DL-ESWT) is a novel and potential way in regeneration medicine, and now it has been used in many areas which have demonstrated its unique superiority. At present, some researchers have applied ESWT to clinical therapy for erectile dysfunction (ED), which achieves satisfactory therapeutic effects. However, the metabolic change of corpus cavernosum with ESWT is still unclear. To investigate the metabolic change of corpus cavernosum with ESWT in a rat model of DMED induced by streptozotocin (STZ).

Methods: We divided human umbilical vein endothelial cells (HUVECs) in three groups. Group 1 is control group, without ESWT. Group 2 is half treated group, with ESWT for former three passages. Group 3 is full treated group, and we applied ESWT to HUVECs for every passage. After five passages, we collected the cells, supernatants and proteins for ELISA and Western blot. The DMED rats were randomly divided into 2 groups (N=10 per group): 1 DMED group, 2 DMED + ESWT group. The normal group (N=10, without STZ) is the control group. Erectile function and other expression experiments were carried out after STZ injection of 8 weeks. ESWT was repeated 3 times per week with one day's break, for a total duration of 4 weeks. Immediately after recording of intracavernous pressure (ICP), the penis was then harvested for histologic analysis, ELISA and western blotting.

Results: The ratio of ICP/MAP was significantly higher in the ESWT group than in the DMED groups (P<0.05). Expression of growth factors increases after ESWT *in vitro*

($P < 0.05$). ESWT can promote proliferation of endothelial cells in corpus cavernosum. The result was significantly higher in the ESWT group than in the DMED group ($P < 0.05$). ESWT can improve cell metabolism in vivo. The expression of mitochondrial membrane proteins is higher in the ESWT group than in the DMED group ($P < 0.05$). And the lactate concentration is higher in the ESWT group than in the DMED group ($P < 0.05$).

Conclusions: There was a metabolic coupling between oxidative phosphorylation and anaerobic glycolysis of cells in the corpus cavernosum. And after ESWT there were a lot of lactic acid produced by anaerobic glycolysis of endothelial cells taking part in the tricarboxylic acid cycle of cells in corpus cavernosum, which could generate a great deal of energy to support growth and proliferation.

Keywords: Defocused low-energy shock wave; erectile dysfunction

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AB099. Improvement of persistent detrusor overactivity after relief of bladder outlet obstruction treated by phytotherapeutic agent

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Background: Many patients with benign prostatic hyperplasia need treatment for remaining storage symptoms after surgery. Therefore, we evaluated the effect of plant

combination on persistent detrusor overactivity (DO) after relief of bladder outlet obstruction (BOO).

Methods: Rats were assigned as three groups: control ($n=6$), persistent DO ($n=6$), and persistent DO treated with the plant combination ($n=6$) groups. Persistent DO after relief of partial BOO was made and 6 of them were orally administered with the plant combination.

Results: After 4-week treatment with the plant combination, significantly reduced DO by cystometry was observed compared with persistent DO group. Moreover, oxidative stress, pro-inflammatory cytokines, and M3 muscarinic receptor were significantly increased. Additionally, significantly decreased oxidative stress, pro-inflammatory cytokines, and M3 muscarinic receptor in the bladder were observed after treatment with the plant combination.

Conclusions: Treatment with the plant combination improves persistent DO after relief of BOO mediated by antioxidative and anti-inflammatory effect. Further study is necessary to identify exact mechanism of treatment effect of the plant combination.

Keywords: Detrusor overactivity (DO); bladder outlet obstruction (BOO); phytotherapy

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AB100. The gold standard of erectile function assessment— intracavernosal pressure detection: How to anesthetize?

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